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REMARKS

Entry of this Amendment is proper since it does not raise new issues and does not require further search by the Examiner.

Claims 1-32 are all the claims presently pending in the application. Claims 1, 3-7, 11-14, 16-22, 28 and 31-32 have been amended to more clearly define the invention. Claims 1, 14, 22 and 31-32 are independent.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sung (U.S. Patent No. 6,184,945) in further view of Yamazaki et al. (U.S. Patent No. 6,118,506).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as recited, for example, in claim 1) is directed to a liquid-crystal display device which includes a plurality of address wires formed on an insulating substrate, a gate insulating film formed on the address wires and on the insulating substrate, a plurality of data wires, the data wires crossing the address wires, an upper layer insulating film formed on the data wires and on the gate insulating film, the upper layer insulating film having a smaller thickness and higher dielectric constant than the gate insulating film, and a picture element area.

Further, the picture element area includes a transparent electrode, having a transparent conductive film, formed on the upper layer insulating film and surrounded by the address wires and the data wires, a thin-film transistor section for selectively connecting the data wires with the transparent electrode by a gate connected to the address wires, and a capacitor section.

Importantly, the capacitor section includes a first electrode formed on the gate insulating film and including the same conductive film as in the data wires. the first electrode

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having an innermost portion formed over the address wires, a second electrode on the upper layer insulating film and including the same transparent conductive film as in the transparent electrode, and at least a portion of the upper layer insulating film formed between the first electrode and the second electrode.

Conventional liquid crystal display devices may include a capacitor section having an electrode formed outside of the address wiring in the pixel area (Application at page 6, line 25-page 7, line 15). However, as a result, an effective aperture ratio of the image section is decreased and the display image is poorly lit (Application at page 7, line 16-page 8, line 6).

The claimed device, on the other hand, includes a capacitor section having a first electrode having an innermost portion formed over the address wires (Application at Figure 1; page 9, line 4-page 10, line 4). As result, the capacitor section has larger electrostatic capacitance per area compared with the case of the conventional liquid-crystal device using the gate insulating film as a dielectric layer in the capacitor section, which improves the aperture ratio (Application at page 39, line 23-page 40, line 1).

II. THE SUNG AND YAMAZAKI REFERENCES

The Examiner alleges that Sung would have been combined with Yamazaki to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Sung discloses a liquid crystal display apparatus that includes electrodes which are opposed to pixel electrodes and which generate cumulative capacitance. Gate electrodes and the substrate are covered with a first (gate) insulating film. Over the first insulating film is a semiconductor active film. A second insulating film corresponds to a pixel part and is provided to cover the thin film transistors, the first insulating film, and source wires (Sung at Abstract).

Yamazaki discloses retaining capacitors formed in a liquid crystal display in every region where a black matrix 316 overlaps pixel electrodes 318. Parasitic capacitances created between the black matrix 316 and the gate and data lines can allegedly be reduced to a negligible level (Yamazaki, col. 7, lines 21-50).

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Clearly, these references would not have been combined as alleged by the Examiner. Indeed, these references are directed to different problems and solutions. Specifically, Sung is intended to ensure signal stabilization and numerical aperture improvement by using fewer masks in an allegedly simpler fabrication process (Sung at col. 2, lines 32-35), whereas Takeuchi is intended to reduce a parasitic capacitance between the black matrix 204 and each of the gate lines 201 and data lines 202 by reducing the relative dielectric constant of an interlayer dielectric film (Takeuchi at col. 3, lines 61-67). Therefore, these references are completely unrelated, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Further, Applicant submits that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, the Examiner merely states that it would have been obvious to combine these references "because of the benefits taught by Yamazaki". However, the Examiner's stated motivation to combine is completely unrelated to a stated objective of the claimed invention and, therefore, is insufficient to support the alleged combination.

Moreover, neither Sung nor Yamazaki teaches or suggests a capacitor section having *"a first electrode formed entirely over said address wires on said gate insulating film and comprising the same conductive film as in said data wires, and having an innermost portion formed over said address wires"* as recited in claim 1, and similarly recited in the other independent claims.

As noted above, unlike conventional liquid crystal display devices which include a capacitor section having an electrode formed outside of the address wiring in the pixel area, the claimed device includes a capacitor section having a first electrode formed entirely over the address wires on the gate insulating film and including the same conductive film as in the data wires. As result, the capacitor section has larger electrostatic capacitance per area compared with the case of the conventional liquid-crystal device using the gate insulating film as a dielectric layer in the capacitor section, which improves the aperture ratio.

Clearly, these novel features are not taught or suggested by the cited references. Indeed, the Examiner surprisingly attempts to equate the electrode film 103 in Sung with the first electrode in the capacitor section of the claimed invention. However, this is clearly

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incorrect.

Indeed, Applicant notes that in the capacitor section of the claimed invention, the first electrode has an innermost portion which is formed over the address wires on the gate insulating film, which helps to provide for a large aperture ratio. This is clearly not taught or suggested by Sung. Instead, Sung clearly teaches that the innermost portion of the electrode film 103 is formed outside of the address wires 86 (i.e., not over the address wires 86). Indeed, the overwhelming majority of the electrode film 103 is not formed over the address wires 86 in the Sung Device.

Therefore, the Sung device would likely suffer from the same problems as in the conventional devices described in the Background section of the present Application. Specifically, the Sung device would likely have a small aperture ratio because the electrode 103 is formed outside of the address wires 86 and, therefore, covers a large portion of the pixel area, and blocks the backlight in the area of the pixel element.

Similarly, Yamasaki does not teach or suggest the claimed invention. Indeed, as noted above, Yamasaki merely discloses retaining capacitors formed in a liquid crystal display in every region where a black matrix 316 overlaps pixel electrodes 318. This is completely unrelated to the capacitor section of the claimed invention. Certainly Yamasaki does not teach or suggest a capacitor section in which the first electrode has an innermost portion which is formed over the address wires to help to provide for a large aperture ratio.

In fact, the Examiner relies on Yamasaki merely as allegedly disclosing varying a thickness and two insulating layers. That is, nowhere does the Examiner even allege that Yamasaki teach or suggest the capacitor section of the claimed invention. Therefore, Yamasaki does not make up for the deficiencies of Sung.

Therefore, these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw the rejection.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in

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condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,



Phillip E. Miller

Registration No. 46,060

Date:

8/29/03

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing Amendment was filed by facsimile with the United States Patent and Trademark Office, Examiner David Y. Chung, Group Art Unit # 2871 at fax number (703) 872-9319 this 29th day of August, 2003.



Phillip E. Miller

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